

## BAB VI

### KESIMPULAN DAN SARAN

#### 6.1 Kesimpulan

Perbedaan proporsi ekstrak teh hitam berpengaruh nyata terhadap kadar air, warna, dan aktivitas antioksidan *hard candy* teh hitam, tetapi tidak memberikan pengaruh yang nyata terhadap perbandingan theaflavin dan thearubigin serta tekstur *hard candy* teh hitam. Semakin tinggi proporsi ekstrak teh hitam kadar air *hard candy* teh hitam semakin tinggi, aktivitas antioksidan pada *hard candy* teh hitam juga semakin tinggi, dan tekstur *hard candy* teh hitam semakin kokoh.

Perbedaan proporsi ekstrak teh hitam berpengaruh nyata terhadap organoleptik (warna, kelengketan, dan rasa) *hard candy* teh hitam. Semakin tinggi proporsi ekstrak teh hitam kesukaan panelis terhadap warna, kelengketan, dan rasa cenderung semakin menurun.

Perlakuan terbaik dalam penelitian ini adalah *hard candy* teh hitam dengan proporsi ekstrak teh hitam sebesar 10% dengan kadar air 2,11%, *hardness* 46.513,59 g/s, *lightness* 21,1, *redness* 9,2, *yellowness* 7,3, persen inhibisi 38,54%, serta nilai kesukaan organoleptik panelis terhadap rasa 5,24 (agak suka), warna 5,45 (agak suka), kelengketan 4,59 (netral).

#### 6.2 Saran

Perlu dilakukan penelitian lebih lanjut tentang interaksi senyawa-senyawa dari teh hitam yang berpengaruh terhadap warna, rasa, kelengketan serta aktivitas antioksidan pada *hard candy* teh hitam.

## DAFTAR PUSTAKA

- Association of Official Agricultural Chemists*. 2005. *Official Methods of Analysis of AOAC International*. USA: Association of Official Agricultural Chemists inc.
- Ardianto, R. 2010. *Asal Mula Teh Hitam*. [http://reshaardianto.student.umm.ac.id/2010/02/04/asal-mula-teh-hitam/\(23 september 2012\)](http://reshaardianto.student.umm.ac.id/2010/02/04/asal-mula-teh-hitam/(23%20september%202012).).
- Ardianto, R. 2010. *Kandungan Teh Hitam*. [http://reshaardianto.student.umm.ac.id/2010/02/04/kandungan-teh-hitam/\(23 september 2012\)](http://reshaardianto.student.umm.ac.id/2010/02/04/kandungan-teh-hitam/(23%20september%202012).).
- Arifin, S. M., Bambang, Dharmadi, A., Santoso, Adimulyo, S., Suryatmo, Sumantri, Heksana, E.A. dan Affandi. 2004. *Petunjuk Teknis Pengolahan Teh*. Bandung: Pusat Penelitian Teh dan Kina Gembong.
- Badan Standarisasi Nasional, 1994. *Kadar Air Permen* (SNI.01-3547-1994). Jakarta: Departemen Perindustrian RI.
- Balentine, D. A., Harbowy and Graham. 1998. *Tea: The Plant and Its Manufacture*. USA: CRC Press.
- Buckle, K. A., Edwards, R. A., Fleet, G. H. dan Wootton. 2009. *Ilmu Pangan*. Jakarta: Universitas Indonesia.
- Chen, H., Qu. Fu, Dong, P. and Zhang. 2009. *Physicochemical Properties and Antioxidant Capacity of 3 Polysaccharides from Green Tea, Oolong Tea and Black Tea*. *Journal Food Science*, 74 (6): 469-474.
- Chinachoti, P. 1993. *Water Mobility and its Relation to Functionality of Sucrose Containing Food Systems* dalam *Food Technology* Vol. 47, No:11. Chicago: Institute of Food Technologists, The Society for Food Science and Technology.
- Cruse, P. 2012. *Introduction to Colour Spaces*. [www.colourphil.co.uk/lab\\_lch\\_colour\\_space.html](http://www.colourphil.co.uk/lab_lch_colour_space.html) (1 April 2013).
- deMan. 1999. *Principles of Food Chemistry Third Edition*. Maryland-Aspen Publishers, Inc..

- Edhisambada. 2011. *Metode Uji Aktivitas Antioksidan Radikal 1,1 difenil-2-pikrilhidrazil (DPPH)*. <http://edhisambada.wordpress.com/2011/02/22/metode-uji-aktivitas-antioksidan-radikal-11-difenil-2-pikrilhidrazil-dpph/> (23 Mei 2013).
- Furia, T. E. 1992. *CRC Handbook of Food Additives*. Boston: CRC Press.
- Gaman, P. M. and Sherrington. 1994. *Pengantar Ilmu Pangan, Nutrisi dan Mikrobiologi*. Yogyakarta: Gajah Mada University Press.
- Gaonkar, A.G. 2006. *Ingredient Interactions Effects on Food Quality, second edition*. New York: Taylor and Francis Group.
- Gramza, A., Lemanska, K., Korczak, J., Wasowicz and Rudzinska. 2005. *Tea Extracts as Free Radical Scavengers. Polish Journal of Environmental Studies*, 14 (6): 861-867.
- Hafezi, M., Nasernejad, B. and Vahabzadeh. 2006. *Optimization of Fermentation Time for Iranian Black Tea Production*. Iran: Department of Chemical Engineering Amikabir University of Technology.
- Halim, Y. 2006. *Pengaruh Tingkat Substitusi Glukosa dengan Sorbitol terhadap Sifat Fisikokimia Kembang Gula Keras (hard candy)*. Surabaya: WM.
- Harler, C. R. 1963. *Tea Manufacture*. London: Oxford university Press.
- Hartoyo, A. 2003. *Teh dan Khasiatnya bagi Kesehatan*. Yogyakarta: Kanisius
- Haryati, A., 1999. Pengaruh Penambahan Sulfit terhadap Kerusakan Vitamin C Permen Jelly Gelatin Jambu Biji. *Skripsi S-1*, Fakultas Pertanian IPB, Bogor. <http://repository.ipb.ac.id/bitstream/handle/123456789/57953/BAB%20II.%20TINJAUAN%20PUSTA%20KA.pdf?sequence=3> (10 April 2013).
- Henning, S. M., Lee, Thames, Wang and Heber. 2004. *Bioavailability and Antioxidant Activity of tea Flavonols After Consumption Green Tea, Black Tea or Green Tea Extract Supplement. The American Journal of Clinical Nutrition*, 80 (7): 1558-1564.

- Jackson, E. B. 1995. *Sugar Confectionery Manufacture*. London: Blackie Academic & Profesional.
- Jati, S. 2008. *Efek Antioksidan Ekstrak Etanol 70% Daun Salam (Syzygium polyanthum [Wight.] Walp.) pada Hati Tikus Putih Jantan Galur Wistar yang Diinduksi Karbon Tetraklorida (CCl<sub>4</sub>)*. Skripsi S-1, Fakultas Farmasi Universitas Muhammadiyah Surakarta. <http://etd.eprints.ums.ac.id/2325/1/K100040200.pdf> (19 Maret 2013)
- Jeffery, M. S. 1993. *Key Function Properties of Sucrose in Chocolate and Sugar Confectionery*. Chicago: *Institute of Food Technologists, The Society for Food Science and Technology*.
- Karori, S. M., Wachira, Wanyoko and Nguere. 2007. *Antioxidant Capacity of Different Types of Tea Products*. *Journal of Agricultural and Food Chemistry*, 6 (19): 2287-2296.
- Kartika, B., Hastuti, P. dan Supartono. 1998. *Pedoman Uji Inderawi Bahan Pangan*. Yogyakarta: PAU Pangan dan Gizi, UGM.
- Kyle, J. A. M., Moorrice, McNeill and Duthie. 2007. *Effect of Infusion Time Addition of Milk on Content and Absorption of Polyphenols from Black Tea*. *Journal of Agricultural and Food Chemistry*, 55 (8): 4889-4894.
- Lau, T. 2008. *Healthy Way to Live: The Occurance, Bioactivity, Biosynthesis, Synthesis of Kaempferol*. *Chemistry* 150, 1-4.
- Lukman, I., Huda and Ismail, N. 2009. *Physicochemical and Sensory Properties of Commercial Chicken Nuggets*. *Asian Journal of Food and Agro-Industry*, 2 (2): 171-180.
- Marghitas, L. A., Dezmirean, Moise, Mihai and Laslo. 2009. *DPPH Method for Evaluation of Propolis Antioxidant Activity*. *Bulletin Anima Science and Biotechnologies*, 66 (2): 253-259.
- Matthaus, B. 2002. *Antioxidant Activity of Extracts Obtained from Residues of Different Oilseeds*. *Journal of Agricultural and Food Chemistry*, 53 (6): 4859-4863.

- Picheca, C. 2008. *How Sugar Turns into Candy*. <http://www.canadianliving.com> (2 April 2013).
- Pomeranz, Y. 1991. *Functional Properties of Food Components*, 2<sup>nd</sup> ed. San Diego: Academia Press.
- Prakash, A. F., Rigwihof and Miller. 2003. *Antioxidant Activity. Medallion Laboratories Analytical Progress*, 1-4.
- Prior, R.L., Wu, X., and Schaich, K. 2005. *Standardized Methods for the Determination of Antioxidant Capacity and Phenolics in Foods and Dietary Supplements. Journal of Agricultural and Food Chemistry*, 53 (11): 4290-4302.
- Putratama, M. S. 2009. *Pengolahan Teh Hitam Secara CTC*. Skripsi Sarjana Jurusan Teknologi Pangan dan Gizi, Fakultas Teknologi Pertanian, UGM, Yogyakarta
- Rohdiana, D. 2009. *Teh ini Menyehatkan: Telaah Ilmiah Populer*. Bandung: Alfabeta.
- Rohdiana. 2011. *Theaflavin, Polifenol Teh Hitam yang Diunggulkan*. <http://rumahteh.com/showthread.php?tid=37> (21 Oktober 2012).
- Rosenthal, A.J. 1999. *Food Texture Measurement and Perception*. USA: An Aspen Publication.
- Safrizal, R. 2010. *Penentuan Kadar Sukrosa pada Minuman*. <http://jejaringkimia.blogspot.com> Prosedur (21 Oktober 2012).
- Santi, R. I., Soetjipto dan Limantara. 2006. *Studi Kandungan dan Aktivitas Feofitin Teh Hjaui*. Prosiding PATPI-Kimia dan Biokimia Pangan, Agustus. Yogyakarta, 2-3 Agustus 2006.
- Satoh, E. N., Tohyana and Nishimura. 2005. *Comparison of The Antioxidant Activity of Roasted Tea with Green, Oolong and Black Teas. International Journal of Food Sciences and Nutrition*, 54 (5): 551-559.

- Setiyono, L. 2010. *Proses Pengolahan Teh Hitam*. <http://lutfiblurry.blogspot.com/2010/01/proses-pengolahan-teh-hitam.html> (29 November 2012).
- Setyamidjaja, D. 2000. *Teh, Budidaya dan Pengolahan Pasca Panen*. Kanisius. Yogyakarta.
- Shahidi, F. and Marian. 1995. *Food Phenolics: Sources, Chemistry, Effects and Application*. USA: Technomic Publishing Company, Inc.
- Shahrzad, S., Aoyagi, Winter, Koyama and Bitsch. 2001. *Pharmacokintica of Gallic Acid and Its Relative Bioavailability from Tea in Healthy Humans. The Journal of Nutrition*, 131 (6): 1027-1210.
- Sharief, D. A. 2006. *Optimasi Proses Ekstraksi dan Pengeringan Semprot pada Teh Hijau Instan*. Skripsi Sarjana Jurusan Teknologi Pangan dan Gizi, Fakultas Teknologi Pertanian, IPB, Bogor.
- Sibuea, P. 2003. *Minuman Teh dan Khasiatnya bagi Kesehatan*. <http://www.sinarharapan.Co.id/iptek/kesehatan/2004/0528/kes2.html> (7 Oktober 2012).
- Sudarmadji, S., Bambang, dan Suhardi. 2003. *Prosedur Analisa untuk Bahan Makanan dan Pertanian*. Yogyakarta: Liberty.
- Tjokroadikoesoemo, P. S. 1993. *HFS dan Indsutri Ubi Kayu Lainnya*. Jakarta: Gramedia Pustaka Utama.
- Tranggono, Sutardi, Haryadi, Suparmo, Murdiati, Sudarmadji, Rahayu, Naruki, dan Astuti, M. 1989. *Bahan Tambahan Pangan (Food Additives)*. Yogyakarta: Pusat Antar Universitas Pangan dan Gizi Universitas Gadjah Mada.
- US Department of Health and Human Services. 1992. *Toxicology and Carcinogenesis Studies of Quercetin*. Springfield: National Technical Information Service, U.S. Department of Commerce.
- Thaipong, K., Crosby, Zevalos and Byrne. 2006. *Comparison of ABTS, DPPH, FRAP and ORAC Assays for Estimating Antioxidant Activity from Guava Fruit Extract. Journal of Food Composition and Analysis*, 19 (5): 669-675.

- Tuminah, S. 2004. *Teh sebagai Salah Satu Sumber Antioksidan*. Cermin Dunia Kedokteran, 144, 52-54.
- Vincentini, F. T., Georgetti, Jabor, Caris, Fonseca and Bentley. 2007. *Photostability of Quercetin Under Exposure to UV Irradiation*. *Latin American Journal of Pharmacy*, 26 (1), 119-124.
- Wang, H. 2005. *Catechins: The Essence of Tea*. <http://www.ifis.org/library.html#ifis/11609> (8 Januari 2013).
- Watts, B. M. 1989. *Basic Sensory Methods for Food Evaluation*. Canada: *The International Research and Development Centre*.
- Winarno, F.G. 2004. *Kimia Pangan dan Gizi*. Jakarta: Gramedia Pustaka Utama.
- Yuwono, S. S. dan Susanto. 1998. *Pengujian Fisik Pangan*. THP – FTP: Universitas Brawijaya. Malang.
- Zaveri, N.T. 2005. *Green Tea and Its Polyphenolic Catechins: Medical Uses In Cancer and Noncancer Applications*. Elsevier, *Life Science* 78 (4): 2073-2080.